

Remarks

The Applicants have amended Claims 12 and 22 to recite that each of the layers (a), (b) and (c) is a coextrusion molded article. Support may be found in original Claims 20 and 30. Those claims have accordingly been cancelled. Claims 12 and 22 have also been amended to remove the language concerning no added free diamine. Instead, both of those claims now recite a layer (b) consisting of (B) a polyamide (semi-aromatic polyamide) and optionally an additive selected from the group consisting of an antioxidant, a heat stabilizer, an ultraviolet absorbent, a light stabilizer, a lubricant, an inorganic filler, an antistatic agent, a flame retardant, a crystallization accelerator, a plasticizer, a colorant, a lubricating agent and an impact resistance improver. Support may be found in the Applicants' Specification on page 20, in paragraph [0058], for example.

The Applicants have added new Claims 36 and 37. They depend from Claims 12 and 22, respectively, and recite that the functional group of layer (c) is itaconic acid anhydride. Support may be found on page 29 of the Applicants' Specification, in paragraph [0085], for example. Entry into the Official File and consideration on the merits is respectfully requested.

Claims 32 and 34 stand rejected under 35 USC §112 as failing to comply with the written description requirement. The Applicants note with appreciation the Examiner's helpful comments with respect to support in the Specification concerning the "carbonyl group." The Applicants have accordingly amended Claims 32 and 34 to remove that reference and to substitute a "carboxyl" group as helpfully suggested, among other groups. Withdrawal of the rejection is respectfully requested.

Claims 12 – 14, 16 – 17 and 21 stand rejected on the grounds of nonstatutory obviousness-type double patenting over Claims 5 and 10 of US '553. In view of the inclusion of the subject matter of Claim 20 into Claim 12, the Applicants respectfully submit that this rejection is moot. Withdrawal of the rejection is respectfully requested.

Claims 12, 13, 17, 19 – 23 and 27 – 35 stand rejected under 35 USC §112 as failing to comply with the written description requirement. The Applicants again note with appreciation the Examiner’s helpful comments with respect to “no added free diamine.” The Applicants have accordingly removed that language. Nonetheless, the Applicants have amended Claims 12 and 22 to recite that the layer (b) “consists of” (B) a polyamide and optionally an additive. The Applicants respectfully submit that this language achieves the same effect wherein the layer (b) does not have added free diamine. Withdrawal of the rejection is respectfully requested.

Claims 12 – 13, 17 and 21 stand rejected under 35 USC §102 as being anticipated by Nishi. Inasmuch as Claim 12 has been amended to include the subject matter of Claim 20, the Applicants respectfully submit that the rejection is now moot. Withdrawal of the rejection is respectfully requested.

Claims 12 – 13, 17, 20 – 23, 27 – 28 and 30 – 31 stand rejected under 35 USC §103 over the hypothetical combination of Shimizu and Oka with Stoepelmann. The Applicants note with appreciation the Examiner’s helpful comments hypothetically applying the combination. The Applicants nonetheless respectfully submit that, even if one were to make the hypothetical combination, the multilayer tube resulting from that combination would still be different from the subject matter recited in Claims 12 – 13, 17, 21 – 23, 27 – 28 and 31. Reasons are set forth below.

An important difference between Claims 12 – 13, 17, 21 – 23, 27 – 28 and 31 and Stoepelmann resides in the use of a 1,9-nonenediamine and/or 2-methy-1,8-octanediamine unit in combination with a terephthalic acid and/or naphthalenedicarboxylic acid unit. The rejection points out that Stoepelmann discloses use of a terephthalic acid unit.

The advantages achieved by the Applicants with respect to the alcohol-gasoline permeation preventing property and cost performance, together with other advantageous effects of the multilayer

tube comprising a polyamide 11 and/or 12 layer and a reactive functional group-having fluorine-containing polymer layer (see page 6, line 31 to page 7, line 9; page 20, lines 12 – 16; and Examples and Comparative Examples, particularly Comparative Example 3, of the Specification), is obtained only by using the specific combination of the a 1,9-nonanediamine and/or 2-methy-1,8-octanediamine unit and a terephthalic acid and/or naphthalenedicarboxylic acid unit, in addition to the features of the layers (a), (c) and optional (d).

Therefore, the subject matter of Claims 12 – 13, 17, 21 – 23, 27 – 28 and 31 is not taught or suggested by Stoeppelmann. Even when combined with Oka and/or Krause, there is no such teaching because both of Shimizu and Oka also fail to disclose or suggest those claimed aspects.

Further, Stoeppelmann requires at least one added diamine in the adhesion promoter composition of the intermediate layer to make it adhesive. It is a characteristic feature of Stoeppelmann. However, the Applicants' claimed subject matter does not comprise and does not require added diamine or free diamine in the intermediate layer. As mentioned above, the Applicants' Claims 12 and 22 exclude such added diamine or free diamine.

The fluoropolymer of Stoeppelmann does not have introduced into the molecular chain thereof a functional group having reactivity with a polyamide-based resin. In sharp contrast, the Applicants' fluoropolymer has introduced into the molecular chain thereof a functional group having reactivity with a polyamide-based resin. This improves adhesion between the intermediate layer of polyamide and the inner layer of the fluoropolymer. Again, the Applicants' Claims 12 and 22 require the layer (b) or (d) to consist of the polyamide and an optional additive only, excluding added free diamine. Therefore, Claims 12 and 22 are distinguished from Stoeppelmann. Thus, Stoeppelmann is fundamentally different from Claims 12 and 22.

Claim 22 also requires a multilayer comprising layers (a), (b), (d) and (c) in that order. Stoeppelmann does not, however, disclose this multilayer structure.

Claims 32 and 34 require that the fluorine-containing polymer has at least one specific functional group, but Stoeppelmann does not disclose this feature.

Claims 36 and 37 require that the fluorine-containing polymer has an itaconic acid anhydride group as the functional group. Stoeppelmann does not disclose this feature either.

Shimizu discloses a composition comprising a blend of (a) a fluorine-containing polymer having a functional group which is capable of developing an affinity with resins and (b) a heat resistant thermoplastic polyester resin (Abstract and Claim 1).

However, there is no motivation for one skilled in the art to combine Stoeppelmann with Shimizu. Since Stoeppelmann uses adhesive PA, there is no motivation to replace the fluoropolymer of Stoeppelmann with the fluorine-containing polymer having a functional group of Shimizu. Furthermore, there is no reason why the intermediate layer of PA with added diamine of Stoeppelmann would be replaced by polyamide comprising no added free diamine.

(Also, Shimizu does not disclose the itaconic acid anhydride group of Claims 36 and 37 as the functional group of the fluorine-containing polymer of the layer (c).)

Thus, combining Shimizu with Stoeppelmann does not cure the deficiencies of Stoeppelmann.

Oka discloses a specific semi-aromatic polyamide PA9T and that PA9T has excellent crystallinity, heat resistance, low water absorption property, chemical resistance and lightness as well as excellent dimensional stability, surface appearance and shock resistance in Column 2, lines 32 – 39. However, there is no motivation for one skilled in the art to combine Stoeppelmann with Oka and Shimizu. There is no reason why the intermediate layer of PA with added diamine of

Stoeppelmann would be replaced by PA9T of Oka even when the entire disclosure of Oka is considered.

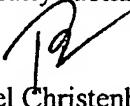
Thus, there is no reason why Stoeppelmann would be combined with Shimizu and Oka in an effort to produce the Applicants' claimed subject matter, which has a specific construction of the laminated layers. In that regard, it must be remembered that there must be motivation to those skilled in the art to make modifications or combinations. The Applicants have demonstrated that there is no such motivation. Moreover, there must also be a reasonable expectation of success in making those modifications. There is nothing in either of Oka or Shimizu that would lead one skilled in the art to believe that any advantage would or could be gained by such a combination with Stoeppelmann. Withdrawal of the rejection of Claims 12 – 13, 17, 21 – 23, 27 – 28 and 31 is accordingly respectfully requested.

Claims 19 and 29 stand rejected under 35 USC §103 over the further hypothetical combination of Krause with Stoeppelmann, Shimizu and Oka. The Applicants respectfully submit that this rejection is inapplicable for the reasons set forth above with respect to Stoeppelmann, Shimizu and Oka. In other words, there is no incentive to hypothetically combine Krause with the other three references and there is nothing in Krause that would cure the deficiencies set forth above. Withdrawal of the rejection is respectfully requested.

Claims 32 – 35 stand rejected over the further hypothetical combination of Nishi with Stoeppelmann, Shimizu and Oka. The Applicants respectfully submit that Nishi fails to provide additional subject matter to the collective disclosures of Stoeppelmann, Shimizu and Oka that would cure the deficiencies set forth above. Withdrawal of the rejection is accordingly respectfully requested.

In light of the foregoing, the Applicants respectfully submit that the entire Application is now in condition for allowance, which is respectfully requested.

Respectfully submitted,


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